RATIONALITY ASSESSMENT OF INDIGENOUS TECHNICAL KNOWLEDGE IN BANANA

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ABSTRACT

The study was aimed to measure the strength and rationality of the compiled indigenous practices to explain their science and technology content. There existed high correlation and significant relationship between the perceived effect and scientific rationality of each ITK as perceived by ESS and RSS. Hence it could be concluded that majority of the ITK item with high perceived effect were perceived to have high scientific rationality also though a few showed no relation at all. This indicates that perceived effect of an ITK is highly influenced by its scientific rationality and vice versa.

Key words: Annuals based cropping system, Banana, Indigenous Technical Knowledge, Perceived effect, Scientific rationality, Extension Sub system (ESS) and Research Sub System (RSS)

INTRODUCTION :

India has made tremendous progress and development in agriculture and allied fields especially after the green revolution. As a result, many high yielding varieties, hybrids and frontier technologies have found their way into agriculture. Hence the emergence of technologies and intensive use of inputs without considering their adverse impact on environment and sustainability resulted. Today attention is shifting to a sustainable form of agriculture to ensure the attainment and continued satisfaction of human needs for the present and more importantly for the future generations. Indigenous knowledge plays an important role in pest management.Adoption of time-tested IK can help the farmer to minimise the risk of health and environmental hazards and bring down the cost of cultivation by reducing insecticides and pesticides. Since the indigenous pest management practices are friendly to the nature and beneficial organisms, going back to traditional practices can help in maintaining our ecology and biodiversity.

METHODOLOGY :

The Palakkad district of Kerala was selected for the study purpose. Out of the thirteen development blocks of the district one block each was selected to represent one agro ecozone. Thus five blocks were selected as the first stage units from 13 blocks in consultation and discussion with the Principal Agricultural Officer of the district. Hence the representatives from all the subsystem identified viz., Farmer Sub Sytem (FSS), Extension Sub Systems (ESS) and Research Sub System (RSS) were included as the respondents for the study.Primary data were collected from the respondents of FSS. Modified, shortcut PRA/PLA sessions were resorted to elicit the required data. The procedure was free from lengthy questionnaires and schedules. Instead, a combination of Focused Group Discussions (FGD), Brainstorming and semi structured Group Interviews (SSGI) were followed.

The Kendall's coefficient of correlation, Spear-manns rank order correlation, Mann-whitney 'U' test was used as statistical tools. Kendall's coefficient of concordance, the formula used was

$$Kc = \frac{[Cj^2 - (Cj^2/n)]}{1/12\ K^2 n(n^2-1)}$$

Cj be the j^{th} column for J = 1, 2,……n.
N be the number of observations in each variate
K be the no. of variates.

RESULTS AND DISCUSSION

A total of 432 ITK items were initially documented on pest management from all the above mentioned cropping system..In anuuals based cropping system two crops were included namely, banana and tapioca. Out of the total ITKs collected 16 ITK's were initially documented from the ACS which was reduced to 7 ITK's from the preliminary survey, which constitute the key Informant guide for Key Informant Workshop. The ITK practices screened by the experts were taken as such and were subjected to Kendall's coefficient of concordance, without doing further screening. Hence the number of ITK's remained the same. The ITK's ranked based on it's scientific rationality alone as given by the RSS are given below and represented in table 1.The scientific rationality behind each practice was also explained. The Kendall's coefficient of concordance (Kc), 0.134 which was significant at 0.01 level.

It is evident from the table that the farmers possess less traditional knowledge in banana cultivation and they strongly adhered to the modern cultivation practices in the crop.

Though the practices finally listed were limited in number, it holds good when its scientific background was assessed. Moreover this gives valuables ideas, which can be utilized for the experts in their modern knowledge to minimise the pesticide use and health hazards.

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Table 1. Evaluation by the RSS on the scientific rationality of ITK items in Annuals based cropping system

Sl.No	ITK items	Code No.	Score	Rank
1	Planting *chettikoduveli* (*Plumbago rosea*) resist rat or pig attack in tapioca	ACS-6	62.57	I
2	Plant turmeric (*Curcuma longa*) in plot to scare away rats in tapioca	ACS-7	43.68	II
3	Green leaf manuring with *parakom* (*Ficus hispida*) and *maruthu* (*Terminalia paniculata*) *or konginipoo* (*Lantana camera*) in banana pit reduces pests and disease in general	ACS-5	43.2	III
4	Keep or plant rhizome in a cover containing lime reduces pest and diseasein banana	ACS-1	34	IV
5	Green leaf manuring with *kanjiram* (*Strychnos nux vomica*) and neem (*Azadirachta indica*) repels pseudostem borer in banana	ACS-2	32.28	V
6	Smoke treatment of suckers from burning bamboo poles for banana minimizes pests.	ACS-4	30.9	VI
7	Fried fenugreek (*Foenm greesium*) application in leaf axils control pseudostem borer	ACS-3	26.57	VII

Planting *chettikoduveli* (*Plumbago rosea*) control rats and pig attack in tapioca' was assigned first rank with a mean weightage score of 62.57., the practice is very simple and compatible with the existing farming situation. The technology seems to have scientific rationale, while considering the repellent action of *chettikoduveli (Plumbago rosea)*. The root bark contains an orange yellow pigment named plumbagin, the active principle, which can cause irritation thus scaring the rats and pigs.

Another practice of 'planting turmeric (*Curcuma longa*) in tapioca plot to scare away rats (ACS-7)' was also ranked high, may be due to possible repellant action of turmeric. The traditional practice was commented as simple and easy to adopt. Moreover, planting turmeric would fetch additional income.

Organic manuring with the green leaves of '*parakom'* (*Ficus hispida*), '*maruthu*' (*Terminalia paniculata*) or '*konginipoo'* (*Lantana camera*) to reduce pests and disease incidence in banana (ACS-5)' was preferred third by the RSS. This practice holds a strong scientific rationale behind. *Lantana* was reported to have 60 to 100 per cent effectiveness as a botanical pesticide (Stein, 1990). The leaves of '*kongini'* flower (*Lantana camera*) contain a toxic principle lantadine-A, and stem contains quinine like alkaloid. The bark of *Ficus hispida* contains tannins, caoutchoue and a glucocide. The leaves of *Terminalia paniculata* contain tannin. Despite all these, further experimentation and validation are necessary. The availability of raw materials it's cost and labour is also points of concern.

'Application of cowdung and lime in banana pits against rhizome weevil (ACS-1)', was ranked fourth with a mean weightage score of 34. It is a slightly modified version of sucker treatment that is already being recommended and widely used ie; 'dipping the rhizome in cowdung and ash mixture'. It is natural that farmers rightly perceived this as a potential ITK. Moreover, farmers also reported this practices as simple, easy to adopt, less costly and compatible with the existing farming system due to their long experience with this conventional technology.

Similarly, 'manuring with the leaves of *kanjiram* (*Strychnos nux vomica*) and neem (*Azadirachta indica*) to manage pseudostem weevil (ACS-2)' was also found to be a good practice. *Kanjiram* contains the toxic alkaloids mainly strychnine, brucine and strychninine including the newly reported vomicine and icajine. Neem leaves contain nimbine, nibinine, nibidine, and azadictin and also the fruits contain a bitter principle bakayanine. The insecticidal property of neem is a proven fact and reported by Stein, 1990. Due to these principles, there could be some scientific rationale behind this practice, a potential avenue for researchers to explore.

Smoking is found to be an ideal practice for almost all the crops due to many reasons. But here it is interested to notice that smoke of bamboo poles reduces incidence of pests and diseases. The RSS couldn't find the exact rationale behind this practice, stressing that this may need further validation. .

The traditional knowledge of using fried fenugreek (*Foenm greesium*) application in leaf axils control pseudostem borer ACS-3, secured third rank position, though the practice lacked direct scientific rationale. The farmers felt that this practice was worth trying.

CONCLUSION :

The rationalization analyses can give confidence to the client system, extension system and research system either to accept or reject the ITK and contemporary farmers' innovations rather than their romanticization. The evaluative perception of the respondents on the ITK items would throw light on the practicability and viability of the indigenous practices. The study can serve as a useful feedback to the research system for designing research agenda, research projects and on-farm trials for testing, validation, refinement and blending of ITK with modern technologies for large-scale recommendation.

REFERSENCES

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